

Ultrafast Avalanche SMD Rectifier


SMA (DO-214AC)

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip junction
- Low reverse current
- High reverse voltage
- Ultra fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive, and telecommunication.

MECHANICAL DATA

Case: SMA (DO-214AC)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified ("_X" denotes revision code e.g. A, B,...)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	1000 V
I_{FSM}	30 A
I_R	5.0 μ A
t_{rr}	75 ns
V_F	1.7 V
E_R	20 mJ
T_J max.	150 °C
Package	SMA (DO-214AC)
Diode variations	Single

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	BYG23M	UNIT
Device marking code		BYG23M	
Maximum repetitive peak reverse voltage	V_{RRM}	1000	V
Average forward current at $T_A = 65$ °C	$I_{F(AV)}$	1.5	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	30	A
Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R} = 1$ A, $T_J = 25$ °C	E_R	20	mJ
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	TEST CONDITIONS	SYMBOL	BYG23M	UNIT
Minimum breakdown voltage	$I_R = 100 \mu\text{A}$	V_{BR}	1000	V
Maximum instantaneous voltage	$I_F = 1.0 \text{ A}$	$T_J = 25^\circ\text{C}$	V_F ⁽¹⁾	1.7
		$T_J = 150^\circ\text{C}$		1.35
Maximum reverse current	$V_R = V_{RRM}$	$T_J = 25^\circ\text{C}$	I_R	5
		$T_J = 125^\circ\text{C}$		50
Maximum reverse recovery time	$I_F = 0.5 \text{ A}$, $I_R = 1.0 \text{ A}$, $I_{rr} = 0.25 \text{ A}$	t_{rr}	75	ns

Note

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	BYG23M	UNIT	
Typical thermal resistance, junction to case	$R_{\theta JC}$	25	$^\circ\text{C/W}$	
Typical thermal resistance, junction to ambient	$R_{\theta JA}$ ⁽¹⁾	150	$^\circ\text{C/W}$	
	$R_{\theta JA}$ ⁽²⁾	125		
	$R_{\theta JA}$ ⁽³⁾	100		

Notes

(1) Mounted on epoxy-glass hard tissue, 17 mm^2 35 μm Cu

(2) Mounted on epoxy-glass hard tissue, 50 mm^2 35 μm Cu

(3) Mounted on Al-oxide-ceramic (Al_2O_3), 50 mm^2 35 μm Cu

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
BYG23M-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG23M-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG23MHM3_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYG23MHM3_A/I ⁽¹⁾	0.064	I	7500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

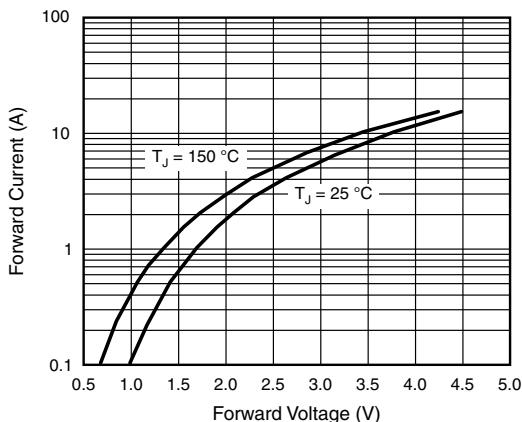
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Max. Forward Current vs. Forward Voltage

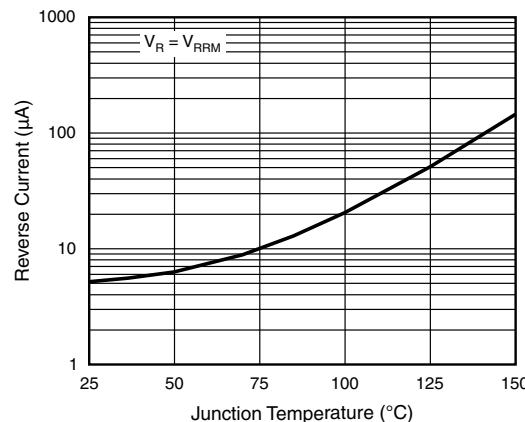


Fig. 4 - Reverse Current vs. Junction Temperature

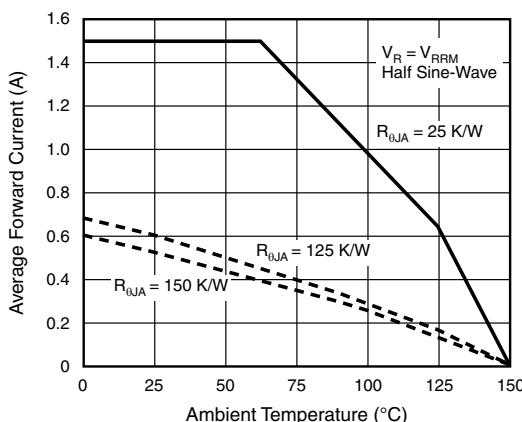


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

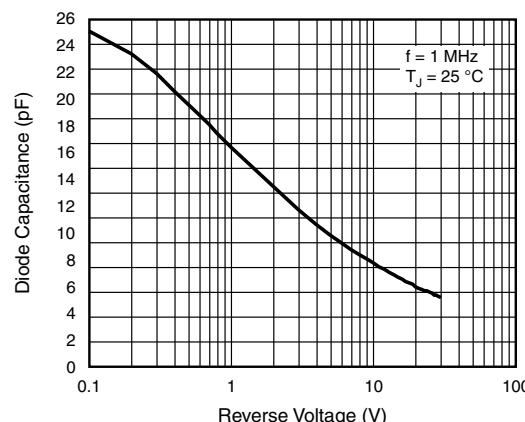


Fig. 5 - Diode Capacitance vs. Reverse Voltage

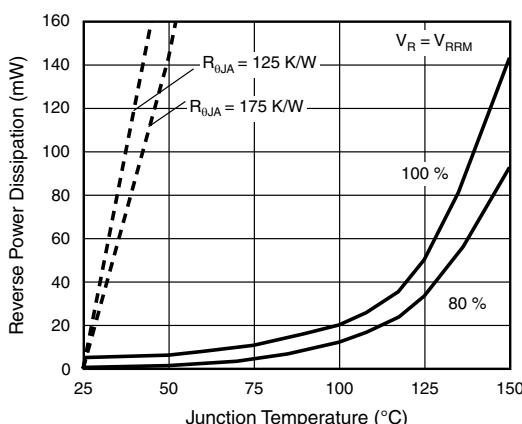
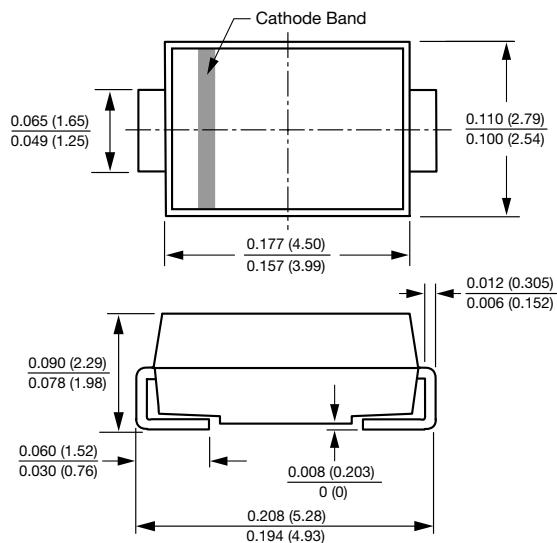
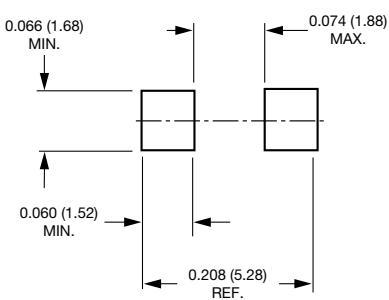


Fig. 3 - Max. Reverse Power Dissipation vs. Junction Temperature

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)

Mounting Pad Layout


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